Getting to net zero in UK public services:
The road to decarbonisation

A UNISON report on the measures and costs for public services to meet climate targets

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UNISON
the public service union

UNIVERSITY of GREENWICH
Public Services International Research Unit

Transition Economics

Table of contents

The policy analysis and case studies for this report were delivered by Dr. Vera Weghmann of the Public Services International Research Unit (PSIRU) at the University of Greenwich. Her research focuses on public services, in particular privatisation, remunicipalisation, renationalisation, public sector financing and public sector reforms.

Transition Economics delivered the quantitative analysis, investment and jobs modelling for this report. Transition Economics is a consultancy providing economic modelling and analysis for a just, rapid climate transition.

www.transitioneconomics.net/

Foreword

As the General Secretary of a campaigning union, I am proud our union has a strong and long record of consistently placing the greening of UK public services and the global climate emergency high on our policy, bargaining and negotiating agenda.

The UK faces some significant real challenges in the next 30 years if it's going to meet its agreed decarbonisation targets to reach net zero by 2050. We cannot allow the government's existing lack of climate ambition or commitment to provide decarbonisation funds to continue, or it will be too little and too late.

Building a resilient green economy as part of the UK recovery from the pandemic represents a once in a generation challenge that the government must now step up to. Public services play a vital role in helping to implement and coordinate paths for decarbonisation. They should be at the centre of efforts to secure greener outcomes nationally and locally, in our workplaces and communities.

In terms of public service delivery, hospitals, schools and colleges, care homes and services, local government buildings, leisure centres, police and courts, social and community housing, water, transport and environment services will all need to decarbonise.

As our report shows, it is now a perfect opportunity to put in place government action plans with procurement and commissioning mechanisms to enable public services to meet their statutory binding obligations.

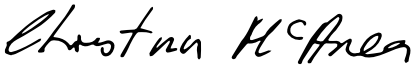
Key to this success is a social partnership approach, engaging with public service workers and their unions to ensure the transition to net zero is just and fair – protecting and creating jobs, improving our health and the planet

Fundamentally UNISON's report shows it is vital that the government commits now to provide transparent public funding of over £140 billion up to 2035 to fund urgent actions needed to decarbonise UK public services.

Without this national funding commitment public services can only achieve green outcomes in an ad hoc and piecemeal way, increasing the risk of not meeting their statutory targets or decarbonisation transition plans unless they divert funds from already underfunded public service budgets.

Our report shows that the sooner we begin to fund the de-carbonisation of public services, the quicker we will make savings and lower costs.

Only by acting now do we put UK public services on the right path to a safe climate future.



Executive summary

Public services as a whole (excluding transport) represent about 8% of the UK's direct greenhouse gas emissions. The NHS alone represents about 4% of the UK's emissions. When procurement, construction, and social housing are taken into account, public services' impacts are much greater.

Different sectors within the overall framework of public services have declared their decarbonisation plans. Some are ahead of the national targets. The NHS has declared that it will reach net zero by 2040, with an ambition to reach an 80% reduction by 2028 to 2032. More than one-third of local authorities (single- and upper-tier) committed themselves to decarbonise their local area by or before 2030.[1]

The government aims to reduce direct emissions from public sector buildings by 75% against a 2017 baseline by the end of the Sixth Carbon Budget.

This report identified 21 different measures that should be taken across buildings, transport, electricity generation, waste, procurement and land use along with costed measures for each of nine different public services.

In our analysis, the UK's public services need a capital investment injection of over £140 billion to 2035 to meet their Net Zero obligations. This will set the public sector on track to meet their climate targets and contribute to the UK's overall carbon reduction aims. The analysis also identified measures that required annual operational expenditures of £1 billion to hit net zero targets.

The measures will also deliver a jobs boost across the UK. In our modelling, the capital investment to green public services could create close to a quarter of a million jobs (an average of 240,000 direct and via supply chain) throughout the course of a 15 year programme.

As well as improving the quality of life for service users, workers and the wider community, a number of the measures will also result in significant savings to public services' budgets, through lower energy bills, cheaper to run fleets, and procurement savings.

UNISON fully advocates that quality public services are best delivered by public ownership of public services and utilities rather than privatisation, outsourcing or PFI contracting of public services.

This report does not seek to define the sources of

1 https://www.nao.org.uk/wp-content/uploads/2021/07/Local-government-and-net-zero-in-England.pdf

investment for decarbonisation per sector but the evidence shows that reliance on private investment in public service decarbonisation, which is not forthcoming, will delay meeting net zero targets. There are alternative measures that can raise public revenues in a fair and progressive way.

Furthermore if the public sector is decarbonised through private investment such as private finance initiative (PFI) schemes, it will add significant costs that could be saved if the projects were delivered in-house. The benefit of in-house delivery offers more value for money with flexibility and control to adapt services and supply chains as new technology and changes come along in the next decade.

Investment will likely come from a range of sources, including the majority needed from central government funding, borrowing (for e.g. using the new UK Infrastructure Bank) by local authorities and other public bodies, and to some extent private investment. The likely and preferred source will differ from sector to sector. For example, existing financing mechanisms vary significantly between the NHS, local authorities, universities, housing authorities and water utilities.

Decarbonisation funding however must be fair and transparent and any private investment must not be more expensive than public borrowing nor put the burden of a Just Transition on low paid public service workers or local communities.

Regional 'levelling up' also needs to be embedded in the public service decarbonisation transition across the UK so that costs and benefits are spread equitably.

The report shows that central government needs to provide additional capital investment now and directly into decarbonisation funding streams that are separated from existing operational public service budgets. This can be done for example by extending the Public Services Decarbonisation Scheme and Public Sector Low Carbon Skills fund or introducing other suitable grant funding mechanisms.

The governments Climate Change Committee has evaluated that the best pathway to get to UK net zero 2050 is to leave the bulk of emissions after 2035 only to those sectors where decarbonisation is harder to deliver due to a lack of technological or social solutions, including shipping, aviation, and some heavy industries.

In contrast, the bulk of decarbonisation measures to be taken by public service organisations can and should happen in the next ten to fifteen years.

Out of the public service sectors examined, local government required both the largest up-front investment (£68 billion) and the largest additional operational expenditure (£0.5 billion a year). This is because of their responsibility for building retrofits, pedestrian and cycling infrastructure, and the need for enhanced waste collection and processing services.

Many of the additional capital investment and ongoing expenditure will be offset by savings over time. For example, recent public sector energy efficiency projects report a pay-back time of 9 years. Other measures, such as some 'circular procurement' practices, represent immediate budget savings.

The report identifies currently however that in nine main public service sectors - health care, social care, local government, education, police and justice, community care, housing associations, water, and environment – the review of six key priority areas (public service buildings, electricity generation, transport, waste, procurement and land use) shows there remains significant lack of funding and operational challenges to implement decarbonisation transition plans.

In short if the UK wants to meet its public service decarbonisation and net zero targets its efforts have to accelerate tremendously. The key findings set out these significant challenges more clearly.

The recommendations emphasise the benefits of joint working, engaging workers in the workplace, and adopting social partnership approaches with public service trade unions, so we can establish an agreed Just Transition transparent and sustainable path to achieve net zero.

We also need to see the urgent modernisation of tools such as public procurement to drive green and decarbonisation outcomes in contract delivery and supply chains.

Lastly UNISONs report is seen as our first step in establishing a Just Transition dialogue in public services. Our next steps listed in the conclusion show we will focus next on consulting with central government, devolved governments, regional and local public sector employers and most importantly with our branches and green reps in the workplace.

This would include consultation and responses to our key findings and recommendations, requesting cases studies of good practice and seeking partnership agreements on how we can move forward together on getting to net zero which will benefit all of us in the UK.

Our three key findings

1

The government needs to start funding public service decarbonisation now.

Public services can lead the way in getting the UK to net zero by 2050 if the government provides adequate funding to deliver decarbonisation measures between now and 2035.

I. Our report estimates that this requires capital investment of £140 billion up to 2035, where at least £122 billion should be provided by central government

II. The current government has only committed £8.2 billion towards the identified public services decarbonisation measures only 7% of what is needed. There is therefore a public investment gap of £113 billion between now and 2035

III. Meeting net zero targets depends on policy decisions and public investments being made. The recently published Governments Net Zero strategy relies mainly on private capital. The UK aims to raise £90 billion of private investment by 2030 for its Net Zero strategy. The report shows though only with sufficient public investment now rather than waiting for the private market can the UK's net zero targets be achieved

IV. There are significant financial benefits to starting decarbonisation of public services now. It will bring down operating costs for various public services, leading to long-run savings. Most energy efficiency measures pay back their investment cost within nine years, while some measures (such as circular procurement approaches) can generate savings immediately

2

The government must set up a separate and significant additional climate and decarbonisation budget funded by government.

Public services will find it difficult to meet their statutory climate duties and net zero targets without a separate and significant additional climate and decarbonisation budget funded directly by government

I. UK public services have been subject to over a decade of austerity funding. UNISON research shows that 10 years of austerity saw a £15 billion cut in local government with a further £10 billion cut in the year of 2020 alone and nearly £3 billion is forecast for 2022/23[2]

II. Even after the October 2021 spending review, spending across government departments is still 8% lower than 2009/10 once health and social care are taken out. Although health and social care have recently received a boost, the level of investment is still significantly lower than it was in the period leading up to 2010

III. Our report shows that in six key priority areas, there remains significant lack of funding and operational challenges to implementing decarbonisation transition plans. Public service buildings, electricity generation, transport, waste, procurement and land use are key priorities areas needed to decarbonise to make the difference in reaching net zero

IV. We have identified existing government investment for decarbonisation measures as £8.2 billion from 2021-2025. If overall funding levels remain unchanged we can project a shortfall in funding to decarbonise public services of over £90 billion

V. Without a separate and additional decarbonisation funding stream for public services, there is a high risk that public authorities will feel under pressure to meet their statutory duties and net zero plans by diverting funds from already overstretched and underfunded operational budgets

VI. Public service decarbonisation outcomes and pathways will be delayed or implemented in an ad hoc or piecemeal way or simply will not be achievable. This will mean statutory duties are not met and that net zero targets will not be met by 2050

3

The government must set up a social partnership and dialogue with trade unions in public service decarbonisation

The benefits of a government social partnership approach and engaging with workers on a Just Transition and decarbonisation plans to get to net zero in public services are not being realised in all regions of the UK

I. The UN 2015 Cop21 Paris Agreement preamble committed all national governments to provide quality green jobs in their Just Transition plans. To achieve those goals, governments must take a social partnership approach and speak to workers and their unions about decarbonisation plans

II. The UK government has failed to set up any kind of national Just Transition framework, Commission, Minister or social partnership model to help develop and implement a low carbon economy for the UK including for public services

III. Devolved governments in Scotland and Wales have embedded a social partnership approach. This is resulting in clear benefits, including for example:
   - a shared understanding of the challenges and potential gains from ambitious decarbonisation measures
   - realistic decarbonisation and Just Transition costings and fundings
   - planning of green job growth, jobs lost, new skills and training of the workforce
   - public service sector and workplace green agreements, technology agreements and Data Impact Assessments
   - recognising the need for mandatory union branch green reps facility time
   - opportunities for public service infrastructure
   - the use of green public procurement social provisions and new corporate Failure to Prevent (negative human rights and environmental impacts) regulations based on human rights due diligence for all goods and services

IV. Failing to embed a UK-wide social partnership approach would likely get in the way of smooth delivery of the UK's Nationally Determined Contributions (NDCs) and Net Zero Strategy

2 https://www.unison.org.uk/news/article/2021/06/councils-need-a-bold-new-vision-to-fund-and-deliver-essential-services/

Table KF1. Summary of key findings

Projects	Total capital investment needed to 2035	Capital investment needed from government	Capital investment committed	% committed	Public capital investment shortfall	Jobs created average over 15 years
Buildings						179,818
Retrofit public buildings and offices	36,509,318,307	35,978,670,963	2,885,022,500	8.02%	33,093,648,463	75,403
Retrofit homes	36,559,071,900	36,559,071,900	1,754,807,500	4.80%	34,804,264,400	77,474
Retrofit investment properties	864,000,000	0		0	0	1,784
Heat networks	15,750,000,000	4,950,000,000	701,923,000	14.18%	4,248,077,000	25,157
Electricity Generation						15,176
Install rooftop solar panels (where appropriate)	10,568,166,752	10,400,781,701	0	0.00%	10,400,781,701	7,918
Additional renewable energy generation	9,202,936,150	6,902,202,113	0	0.00%	6,902,202,113	7,258
Transport						32,969
Fully electric fleet renewal (where appropriate)	608,948,930	577,813,482	0	0.00%	577,813,482	-
Onstreet electic vehicle chargers	11,733,333,333	11,733,333,333	572,000,000	4.88%	11,161,333,333	14,244
Install electric vehicle chargers for fleet & commuters	916,578,265	646,547,866	50,000,000	7.73%	596,547,866	1,113
Install EV chargers for visitor parking	343,877,429	257,908,072	0	0.00%	257,908,072	417
Offer electric bikes to staff	61,634,475	57,760,620	900,000	1.56%	56,860,620	33
Improve pedestrian & cycling infrastructure	7,900,000,000	7,900,000,000	2,000,000,000	25.32%	5,900,000,000	16,311
Replacing street lighting with LEDs	832,000,000	416,000,000	0	0.00%	416,000,000	851
Waste						11,542
Increasing compost capacity	4,500,000	4,500,000	0	0.00%	4,500,000	11
Landfill management up to 2035	1,244,000,000	1,244,000,000	0	0.00%	1,244,000,000	2,352
Wastewater treatment decarbonisation	7,328,000,000	833,785,376	46,200,000	5.54%	787,585,376	6,637
Deposit Return Scheme – set up costs	1,265,871,742	1,265,871,742	27,600,000	2.18%	1,238,271,742	2,523
Provide public tool libraries – set up costs	27,502,500	27,502,500	0	0.00%	27,502,500	18
Land use						2,484
Switching county farms to organic	52,542,000	52,542,000	0	0.00%	52,542,000	45
Land restoration projects	1,990,000,000	1,990,000,000	160,000,000	8.04%	1,830,000,000	2,439
Total	143,762,281,783	121,798,291,668	8,198,453,000	6.73%	113,599,838,668	241,988

Recommendations

I. The government must make available now the identified £140 billion funding needed to set public services on a secure decarbonisation path by 2035 to meet net zero by 2050
   - The governments significant financial reliance on private sector investment must be realistic, for example the amount of loans available through the UK Infrastructure Bank loan scheme, currently £22 billion is not sufficient and the priority areas are restrictive with an emphasis on only 4 areas: clean energy, transport, digital, water and waste – this needs to be much more flexible
   - The Treasury's funding approach, expressed in its Net Zero Review (October 2021), that the cost of government funded net-zero programmes may be met through "lower public spending (and reductions in public services) in other areas" must be replaced with an approach that sets out instead fair and progressive capital investment revenue streams for a separate decarbonisation budget for public services
   - The identified public investment gap of £113 billion between now and 2035 must be closed by providing a new separate range of transparent national public service decarbonisation funding streams to deliver the key six decarbonisation priority measures identified in this report
   - UK government funded streams for the decarbonisation of public services should be based on an agreed Just Transition framework for public services and streams could range from a grant application formula, extending the Public Service Decarbonisation Scheme and the Public Sector Low Carbon Skills fund etc

II. The government should fund and provide local government authorities with the statutory powers to oversee and commission the local delivery of the decarbonisation and retrofitting of all public buildings, social and community housing. This would create over 240,000 jobs, on average, over a fifteen-year programme or if front-loaded would support more jobs, but for a shorter period of time

III. The government should set up a new UK Just Transition agency or commission for public services, embedding a social partnership approach across the UK. Creating a Just Transition Common Framework across all devolved governments would also make it easier to achieve a set of decarbonisation targets and standards to meet its 'reserved' UK NDCs and help 'level up' decarbonisation outcomes across the UK

IV. The government should put in place a statutory duty to create social partnership Just Transition Boards (regionally and/or locally) underpinned by democratic governance structures. They would oversee the delivery and monitoring of the decarbonisation of public services in various public service sectors and be able to have oversight of an integrative approach. The benefits include:
   - a shared understanding of the challenges and potential gains from ambitious decarbonisation measures
   - realistic decarbonisation and Just Transition costings and fundings
   - planning of green job growth, jobs lost, new skills and training of the workforce
   - public service sector and workplace green agreements, technology agreements and Data Impact Assessments
   - recognising the need for mandatory union branch green reps facility time
   - opportunities for public service infrastructure
   - the use of green public procurement social provisions and a new corporate Failure to Prevent (negative human rights and environmental impacts) regulations based on human rights due diligence for all goods and services

V. Governments must legislate to modernise public procurement social provisions to increase green and decarbonisation outcomes and reduce emissions in supply chains in public procurement contracts. Social value can be created by using clearer green and decarbonisation criteria which must as a minimum promote, enforce and protect the principles of a Just Transition:

   - Mandating public authorities to conduct an in-house award assessment first before initiating any procurement tendering process
   - Awarding contracts on a cost or price only criteria must be ruled out with a mandatory 'price-quality ratio' tendering process, giving sufficient weight to International (ILO) and UK social provisions, to prevent a UK 'race to the bottom'
   - A minimum of 10% weighting should be given to decarbonisation and green awarding criteria when assessing tenders
   - Tendering processes must be regulated, open, fair and transparent and subject to Freedom of Information (FOI) requests. Decarbonisation or climate emergency (crisis) exceptions or commercial sensitivity privacy clauses should not be used to deviate from stringent regulations or prevent disclosure of contracts, particularly of labour costs

- good work practices, fair pay, equality, trade union recognition and collective agreements and exclude companies which operate blacklisting of workers
- strategic use of public procurement in support of local green jobs in employment, reskilling of existing workforce, training and apprenticeships for local economic development and inclusive growth
- enforcement of International and UK labour and human rights through a new corporate Failure to Prevent (negative human rights and environmental impacts) regulation based on human rights due diligence for all goods and services and incorporating joint and several liability
- Identifiable reductions of supply chain emissions

VI. The increased use and advocacy of using digital and AI technology to achieve net zero must be consulted with public services workers and their trade unions through technology agreements, data impact assessments and the regulatory framework for the digitalisation of public services needs to be established through social dialogue in all key public services as part of the Just Transition in Public Services.

VII. The government should mandate that public sector employers give agreed workplace facility time for union green reps to engage and negotiate with employers on Just Transition and decarbonisation plans

Next Steps

UNISON will:

- Publish and share our report to relevant stakeholders
- Engage and consult on our key findings and recommendations with the government, public service employers and relevant community and private contracted organisations delivering public services
- Consult with our service groups, branches, green activists and green reps, on their existing involvement, negotiations, engagements and roles in their workplace on decarbonisation and Just Transition plans with their employers
- Request some good practice public service case studies as part of the engagement and consultation
- Publish in Spring 2022: the key responses from the engagement and consultation of this report, update our analysis where relevant and provide the good practice case studies we hope to receive as part of that consultation.

1 Introduction

Climate change is not something of the future and it is not only happening elsewhere. It is affecting us here and now in the UK. The average temperature is much higher now than it used to be (between 2008 and 2017 it was 0.8°C higher than in the period from 1961 to 1990). Extreme weather events such as floods have become the normality.[3]

This research provides a perspective on the Climate Emergency response in UK public services. In particular, this report provides a critical review of how we get to net zero public service delivery and how much it will cost.

According to the Climate Change Act of 2008, the UK government must set five-year emission reduction targets (Carbon Budgets). Currently we are within the Sixth Carbon Budget, which requires an emissions reduction of 63% from 2019 to 2035 and Net Zero by 2050.[4] This reduction in greenhouse gas emission is legally binding.[5] In other words if the government fails to meet this target it breaks its own laws.

However, these grand promises of the government have not been met by sufficient action and funding. The key strategy and the precise budgeting for the Net Zero Strategy have been delayed by months. And when it finally was released in October 2021 two aspects became strikingly obvious:

Firstly, it is severely underfunded. The UK government stated in its Net Zero Strategy from October 2021 that it has mobilised £26 billion of government capital investment for the green industrial revolution since the announcement to the Ten Point Plan in November 2020. This is far too little. The Climate Change Committee calculated that delivering the Sixth Carbon Budget would require an annual investment programme of around £50 billion per year by 2030.[6] Also the comparison with the other G7 countries shows that the UK is severely underinvesting in net-zero. A recent study by the Trade Union Congress (TUC) also highlighted that the UK's green recovery plan is lagging behind its G7 peers.[7]

Secondly, it relies mainly on private capital. The UK aims to raise £90 billion of private investment by 2030 for its Net Zero strategy. [8] Boris Johnson boldly claimed to 'unleash the unique creative power of capitalism to drive the innovation that will bring down the costs of going green'.[9]

Meeting net zero targets depends on policy decisions and public investments being made. Only with sufficient public investment can the UK's net zero targets be achieved.

Public service organisations have a significant contribution to the UK's greenhouse gas emissions. Public services represent about 8% of the UK's direct greenhouse gas emissions, with the NHS alone contributing to around 4% of the UK's carbon emissions.[10]

In its report on Net Zero and Local Authorities, the Climate Change Committee identifies five main areas for action to reduce emissions:
- Buildings (energy efficiency retrofits and higher standards for new build)
- Electricity generation
- Transport (fleet emissions and public transport provision)
- Waste
- Land use

In addition, public procurement has a significant knock-on impact on carbon emissions through supply chains.

This report examines measures that public service organisations must take to meet the UK's climate targets, across the six areas identified above, in the following sectors: health care, social care, local government, education, police and justice, community care, housing associations, water, and environment.

For each sector and each area for action, this interim report for the first time provides costs of the measures necessary to meet public services' climate targets by 2035. These costings are taken where possible directly from modelling by the Climate Change Committee, or otherwise calculated using government and industry statistics and reporting.

See the Appendix for a full explanation of the methodology.

3 *NZR_-_Final_Report_-_Published_version.pdf (publishing.service.gov.uk)

4 Progress-in-reducing-emissions-2021-Report-to-Parliament.pdf

5 UK target to cut emissions 78% by 2035 is world-leading – but to hit it, action is needed now (theconversation.com)

6 Climate Change Committee (June 2021) Progress in reducing emissions. 2021 Report to Parliament.

7 Ranking G7 Green Recovery Plans and Jobs | TUC

8 About the Global Investment Summit 2021 - GOV.UK (www.gov.uk)

9 UK's net zero strategy has a glaring omission: Rishi Sunak | Climate crisis | The Guardian

10 https:/www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2020/10/delivering-a-net-zero-national-health-service.pdf

2 The pathway to Net Zero

The UK's official climate change targets require an emissions reduction of 63% from 2019 to 2035 and Net Zero by 2050. On first sight it seems that the UK has made great progress in reducing emissions. They are now 48% below 1990 levels in 2020.

However, a large chunk of the recent progress is due to the impact of the Covid 19 pandemic.

Also, while the first (2008-12) and second (2013-17) carbon budgets set by the UK government have been met and it is likely that the UK is also meeting the third (2018-22) carbon budget, currently the UK is not on track to meet the fourth (2023-27) and fifth (2028-32) carbon budgets. And these budgets were set against the previous target of an 80% reduction in emissions by 2050 and not the new Net Zero target (at least 100% reduction by 2050). In short if the UK wants to meet these targets its efforts have to accelerate tremendously.[11]

In the Climate Change Act 2008 six major greenhouse gases were identified, namely: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. Carbon dioxide makes up the bulk of these emissions. Carbon dioxide is mainly produced by burning fossil fuels. The other greenhouse gasses are mainly the consequences of other industrial processes and waste management, such as agriculture and landfill sites.[12]

Net zero means that the amount of greenhouse gases emitted is the same as that taken out from the atmosphere. Carbon sequestration is the name for the process through which carbon oxide is removed from the atmosphere and stored, either by natural processes (e.g. the growth of forests, peatlands, and sea-grass meadows) or through technological solutions.[13]

However, what is measured are the UK's territorial emissions, which are much less than the estimated UK consumption emissions (i.e. the UK's carbon footprint, including emissions embedded in imports).[14]

In the Climate Change Committee's analysis, emissions reductions should be front-loaded wherever practical. The bulk of emissions after 2035 should be limited to those from sectors where decarbonisation is harder to deliver due to a lack of technological or social solutions, including shipping, aviation, and some heavy industries. In contrast, the bulk of decarbonisation measures to be taken by public service organisations can and should happen in the next ten to fifteen years.

11 Reaching Net Zero in the UK - Climate Change Committee (theccc.org.uk)

12 UK net zero target | The Institute for Government

13 What is carbon neutrality and how can it be achieved by 2050? | News | European Parliament (europa.eu)

14 *Progress-in-reducing-emissions-2021-Report-to-Parliament.pdf

3 Privatising Net Zero? The need for public investment.

The UK's climate targets can only be achieved if action is underpinned by appropriate funding. The cost of decarbonisation must be distributed fairly in society and protect vulnerable people.

The UK government stated in its net zero strategy from October 2021 that it has mobilised £26 billion of government capital investment for the green industrial revolution since the announcement to the Ten Point Plan in November 2020.[15] This is only a small share of what is needed. The Climate Change Committee calculated that delivering the Sixth Carbon Budget would require an annual investment programme of around £50 billion per year by 2030.[16]

The government is relying on private investment for putting its net zero strategy into action. Public investment schemes are mainly seen as an enabler for private investment.[17] The majority of the funding for Net Zero is supposed to come from the private sector. In its Net Zero strategy, the UK government announced that it hopes to raise £90 billion of private investment by 2030 for its Net Zero strategy.[18] So far, £5.8 billion of foreign investment in green projects have been sourced since the Ten Point Plan from November 2020.[19]

Yet even with the envisioned private sector investment the net zero strategy is underfunded, as the treasury's own report points out (See Figure 1).[20]

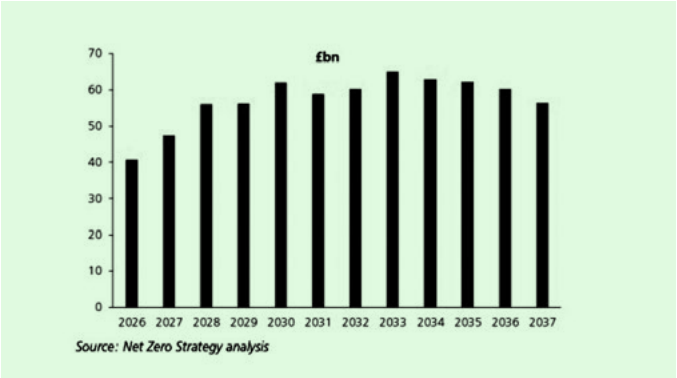


Figure 1: Potential public and private additional capital expenditure requirements for achieving net zero

15 About the Global Investment Summit 2021 - GOV.UK (www.gov.uk)

16 Climate Change Committee (June 2021) Progress in reducing emissions. 2021 Report to Parliament.

17 *NZR_-_Final_Report_-_Published_version.pdf (publishing.service.gov.uk)

18 About the Global Investment Summit 2021 - GOV.UK (www.gov.uk)

19 https://www.gov.uk/government/news/prime-ministers-ten-point-plan-kickstarts-green-investment-boom

20 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1026725/NZR_-_Final_Report_-_Published_version.pdf

This lack of investment is mirrored by the generally low investment (public and private) levels in the UK. Investment in the UK is on average 17% of GDP since 1995, which is the lowest of all G7 economies.[21] A recent TUC report that ranked the G7 countries' green recovery and job creation plans also concluded that the UK is lagging far behind the other G7 nations.[22]

More public spending to invest into net zero is needed. This needs to be paid for by fair and progressive taxation (see section 4) and also by public sector borrowing. While it first might sound attractive to decarbonise the UK's economy with private capital, research has shown that privatisations are more expensive as not only the profits need to be paid for but also as government bonds have nearly always better interest rates than the private borrowing to market rates.[23]

As such if the public sector is decarbonised through privatisations, such as through the private finance initiative, it will add significant costs that could be saved if the projects were delivered in-house. Back in 2011, the Financial Times calculated that the UK taxpayer: "is paying well over £20 billion in extra borrowing costs – the equivalent of more than 40 sizeable new hospitals – for the 700 projects that successive governments have acquired under the private finance initiative.[24]

If decarbonisation initiatives are delivered in-house rather than outsourced to private providers public bodies also maintain more flexibility and control, which is especially needed if circumstances change or new technologies are developed. It is therefore crucial that public bodies take the decarbonisation of the public sector in their own hands and do not lock themselves in with long term contracts with private providers.

As such, wise public sector borrowing is needed to avoid extra costs in the future. Yet, in the Treasury's net zero review it is argued that too much borrowing would be unfair for future generations.[25] An odd reasoning as it will be exactly these future generations that have to suffer from the negative consequences of climate change for their health and well-being.

Generally investing in net-zero will pay off. Net zero will not only save people and the planet but also costs. For example, cleaner air could deliver £35 billion worth of

21 *NZR_-_Final_Report_-_Published_version.pdf (publishing.service.gov.uk)

22 Ranking G7 Green Recovery Plans and Jobs | TUC

23 rapport_eng_56pages_a4_lr.pdf (world-psi.org)

24 Nicholas Timmins and Chris Giles, Private finance costs taxpayer £20bn (pay wall), Financial Times, 8 August 2011.

25 *NZR_-_Final_Report_-_Published_version.pdf (publishing.service.gov.uk)

economic benefits by reducing damage costs to society, for example through lower respiratory hospital admissions. [26] A recent study by Vivid Economics showed that innovation in twelve key low carbon sectors could contribute £27 billion to the economy through domestic economic activity and another £26 billion through exports by 2050.[27]

Box 1: The Public Sector Decarbonisation Scheme

The government aims to reduce direct emissions from public sector buildings by 75% against a 2017 baseline by the end of the Sixth Carbon Budget.[28] This is mainly delivered through the Public Sector Decarbonisation Scheme as well as the Public Sector Low Carbon Skills Fund. Yet the funding is insufficient.

The Public Sector Decarbonisation Scheme provides grants to local authorities and other public bodies for low carbon heating and energy efficiency measures in public sector buildings, for example in hospitals, schools and council buildings this is supported with £475 million per year.[29]

This is not nearly enough. As the two phases of the Public Sector Decarbonisation Scheme demonstrates.

The first phase of the project provided £932 million allocated to 429 projects. Areas to benefit include Manchester, where 36 schools and 22 leisure centres are to be upgraded, as well as the transport authority, police and fire service, for about £78m; Leicester, where the city council will receive £24m for upgrading 93 buildings including 56 schools; and £24m for Hertfordshire County council to upgrade 183 council buildings, including 74 schools and 23 emergency service buildings.[30]

Phase two of the Public Sector Decarbonisation Scheme opened in April 2021 and had only a value of £75m, however it was heavily oversubscribed. In less than a week from opening the application the incoming bids totalled £150m and the application phase closed.[31] Phase 2 will come to an end in March 2022. [32]

Alongside the Public Sector Decarbonisation Scheme there is the Public Sector Low Carbon Skills which budgeted £32 million in the first phase and £15 million in the second phase (2021/22).

This support public sector organisations which lack the expert skills to develop and deliver decarbonisation projects and heat decarbonisation plans.[33]

The costings presented below (section 4 onwards) consider the scale of funding required to retrofit public service buildings to a standard aligned with Net Zero targets.

26 *NZR_-_Final_Report_-_Published_version.pdf (publishing.service.gov.uk)

27 *NZR_-_Final_Report_-_Published_version.pdf (publishing.service.gov.uk)

28 Heat and buildings strategy (publishing.service.gov.uk)

29 HM Government (October 2021) Net Zero Strategy: Build Back Greener.

30 Government to announce £1bn fund to help reduce emissions | Climate crisis | The Guardian

31 Decarbonisation: Let the public sector lead the way (pbctoday.co.uk)

32 Decarbonisation: Let the public sector lead the way (pbctoday.co.uk)

33 Heat and buildings strategy (publishing.service.gov.uk)

4 Funding Net Zero

The government is losing £12.5 billion every year due to the privatisation of key public services (see Box 2). Running the NHS, energy networks, water utilities, rail, buses, Royal Mail, and broadband in the public sector could together save the Treasury £12.5 billion annually or £175 billion cumulatively by 2035.

Box 2: The government could save nearly £12.5 billion every year if these key public services were fully under public ownership

- **Ending the internal market in the NHS would save at least £4.5 billion a year.[34]**
- **Public ownership of energy networks would save £3.7 billion a year.[35]**
- **If England's water companies were in public ownership £2.1 billion per year could be saved annually due to savings on private dividends and cheaper interest rates.[36]**
- **If rail would be under public ownership around £1 billion would be saved every year.[37]**
- **Public ownership of buses would save 506 million a year.[38]**
- **Public ownership of Royal Mail would save £171 annually.[39]**
- **If broadband would be under public ownership £500 million per year could be saved.[40]**

UNISON continues to campaign against the privatisation of public services[41] and backs the campaign group We Own It which advocates bringing back key public services under public ownership.[42]

Funding is a matter of the government's choice. The recent experience of the Covid-19 pandemic illustrated that when there is political will money can be found. For example the UK government swiftly found £37bn which it spent over two years on its track and trace system – run by outsourcing giant Serco and the call centre company Sitel.[43] The government's own evaluation of the track and trace system found that there has been no clear evidence of its overall effectiveness.[44]

The government can and needs to find the money to fund its net zero transition or it will fail its targets. And it is crucial that the funding for net zero investments is not a burden on the poor especially as the UK's wealthy are creating most of the emissions.

According to the Treasury higher income households consume three times more carbon than lower income households in absolute terms.[45] As such the government needs to pump in additional finance into the net zero transition through borrowing, targeted fiscal policy and/or progressive taxation, and rule out austerity measures and cuts in essential public services.

We have learnt from the response to the 2008 financial crisis that austerity measures are disproportionately affecting more vulnerable groups in society and entrench inequalities.[46] It is therefore concerning that the Treasury already announced in its Net Zero Review from October 2021 that the cost of government funded net-zero programmes may be met through "lower public spending (and reductions in public services) in other areas". [47]

Examples from Europe and the US (see Box 3 Learning from the US: Biden's America's Job Plan) show how money can be raised through fair and progressive taxation. Research in Europe showed that a wealth tax on the net worth of the top 1% richest individuals could be introduced to fund the transition to Net Zero.

It has been calculated that a progressive wealth tax at a rate of 1% above the top 1% threshold and an additional 1% above the top 0.1% threshold, and an additional 1% above €1 billion, would raise 1.05% of EU GDP in revenues each year – enough to pay the debt from the European Covid Response in 10 years.[48]

Income from such a tax in Europe and a similar model applied in the UK could further be used to fund the transition to net zero.

34 https://chpi.org.uk/papers/analyses/at-what-cost-paying-the-price-for-the-market-in-the-english-nhs/

35 https://gala.gre.ac.uk/id/eprint/25938/

36 https://gala.gre.ac.uk/id/eprint/21097/20/21097%20YEARWOOD_The_Privatised_Water_Industry_in_the_UK_2018.pdf

37 http://www.transportforqualityoflife.com/u/files/120630_Rebuilding_Rail_Final_Report_print_version.pdf

38 http://www.transportforqualityoflife.com/u/files/160314_Building_a_World-class_Bus_System_extended%20summary%20report_FINAL4_for_web.pdf

39 https://gala.gre.ac.uk/id/eprint/25938/

40 https://www.independent.co.uk/news/business/news/free-broadband-labour-plan-internet-wifi-nationalisation-a9205031.html

41 Blog: Continuing the fight against privatisation | General secretary's blog, News | News | UNISON National

42 UNISON backs We Own It campaign | We Own It

43 COVID-19: Test, track and trace (part 1) - Public Accounts Committee - House of Commons (parliament.uk)

44 COVID-19: Test, track and trace (part 1) - Public Accounts Committee - House of Commons (parliament.uk)

45 *NZR_-_Final_Report_-_Published_version.pdf (publishing.service.gov.uk)

46 https://www.humanrightspulse.com/mastercontentblog/covid-19-and-inequality-the-human-rights-impact-of-economic-austerity-measures-in-the-uk

47 *NZR_-_Final_Report_-_Published_version.pdf (publishing.service.gov.uk)

48 https://voxeu.org/article/progressive-european-wealth-tax-fund-european-covid-response

Box 3: Learning from the US: Biden's America's Job Plan (AJP)

Earlier this year President Joe Biden announced his $2 trillion America's Jobs Plan of infrastructure development and public services over the next eight years. Climate change is high on the job's plan's agenda, indeed it has been argued that around 56% of its total budget is related to climate change.[49]

The AJP is nothing less than a move away from neoliberal rationales. The AJP pursues full employment, equality, social care, and a green economy. It is also committed to raising wages and increasing unionization. The large investment package is planned to be financed by increased taxes on corporations and the rich. It therefore, most strikingly, does not envisage any role for privatisations and does not even involve government borrowing.[50]

Devolution

There are significant devolved approaches in reaching net zero in public services. Whilst NDCs are determined by central UK government more needs to be done to level up approaches and standards across the UK.

Scotland announced in 2019 that it will reach net zero by 2045 – five years earlier than the rest of the UK. The Scottish Government also set more ambitious 2030 targets reducing emissions by 75%. It is thereby going beyond what the Intergovernmental Panel on Climate Change said is required worldwide to limit warming to 1.5 degrees[51]

Wales also committed to net zero by 2050 but is ambitious to get there sooner. The Welsh public sector is playing a leading role. In July 2017, the Cabinet Secretary for Environment and Rural Affairs called for the Welsh public sector to become carbon neutral by 2030.[52]

Northern Ireland does not have specific climate change legislation. It is contributing to the UK target under the Climate Act 2008. The CCC advised Northern Ireland that it needs to cut its carbon emissions by at least 82% by 2050 to contribute to the UK's net zero ambition. However, ultimately the net zero targets will be set by the minister of the Department of Agriculture, Environment and Rural Affairs (DAERA) in Northern Ireland. [53]

In particular social partnership and Just Transition approaches, in Scotland[54] and in Wales[55] should be set out in a Just Transition Common Framework agreement so that the whole of the UK can benefit from these inclusive approaches.

A social partnership approach to achieve net zero in public services provides clear benefits, for workers, service users and communities including for example[56] [57]

- a shared understanding of the challenges and potential gains from ambitious decarbonisation measures
- realistic decarbonisation and Just Transition costings and fundings
- planning of green job growth, jobs lost, new skills and training of the workforce
- public service sector and workplace green agreements, technology agreements and Data Impact Assessments
- recognising the need for mandatory union branch green reps facility time
- opportunities for public service infrastructure
- the use of green public procurement social provisions and a new corporate Failure to Prevent (negative human rights and environmental impacts) regulations based on human rights due diligence for all goods and services

49 The American Jobs Plan Gets Serious about Infrastructure and Climate Change | Center for Strategic and International Studies (csis.org)

50 https://gala.gre.ac.uk/id/eprint/34033/

51 https://www.gov.scot/news/scotland-to-become-a-net-zero-society/

52 decarbonisation-of-the-public-sector-a-call-for-evidence-summary-of-responses.pdf (gov.wales)

53 Northern Ireland and Net Zero (niassembly.gov.uk)

54 https://www.gov.scot/groups/just-transition-commission/

55 https://gov.wales/draft-social-partnership-and-public-procurement-wales-bill

56 https://www.tuc.org.uk/blogs/next-steps-social-partnership-wales

57 https://www.tuc.org.uk/green

6 Costing public services' climate action measures to 2035

In our estimate, the UK's public services need a capital investment injection of over £140 billion by 2035 to meet their Net Zero obligations. This will set the public sectors examined on track to meet their climate targets and contribute to the UK's overall carbon reduction aims.

As well as improving the quality of life for service users, workers and the wider community, a number of the measures will also result in significant savings to public services' budgets, through lower energy bills, cheaper to run fleets, and procurement savings. The analysis also identified measures that required annual operational expenditures of £1billion to hit net zero targets. Most of this should be offset by savings over time.

Our analysis identified up to 21 different measures across buildings, transport, electricity generation, waste, procurement and land use, and costed the measure for each of 9 different public services sectors.

Out of the public service sectors examined, local government required both the largest up-front investment (£68 billion) and additional operational budget (£0.5billion a year), because of their responsibility for building retrofits, pedestrian and cycling infrastructure, and the need for enhanced waste collection and processing services.

Table 1. Summary of costed measures, across all public services

One-off capital expenditure	Investment needed to 2035, £
Buildings	
Retrofit public buildings and offices	36,509,318,307
Retrofit homes	36,559,071,900
Retrofit investment properties	864,000,000
Heat networks	15,750,000,000
Electricity Generation	
Install rooftop solar panels (where appropriate)	10,568,166,752
Additional renewable energy generation	9,202,936,150
Transport	
Fully electric fleet renewal (where appropriate)	608,948,930
Onstreet electic vehicle chargers	11,733,333,333
Install electric vehicle chargers for fleet & commuters	916,578,265
Install EV chargers for visitor parking	343,877,429
Offer electric bikes to staff	61,634,475
Improve pedestrian & cycling infrastructure	7,900,000,000
Replacing street lighting with LEDs	832,000,000
Waste	
Increasing compost capacity	4,500,000
Landfill management up to 2035	1,244,000,000
Wastewater treatment decarbonisation	7,328,000,000
Deposit Return Scheme – set up costs	1,265,871,742
Provide public tool libraries – set up costs	27,502,500
Land use	
Switching county farms to organic	52,542,000
Land restoration projects	1,990,000,000
TOTAL capital investment	143,762,281,783
Regular expenditure – annual	
Increase composting capability	714,286
Collect household food waste and recycling weekly, annual cost	373,000,000
Provide public tool libraries, annual cost	110,010,000
Procurement	
Addressing F gas emissions	31,909,091
Expanding electric car fleets	534,411,064
TOTAL annual operational expenditure	1,050,044,440

7 How decarbonisation investments pay back

With some exceptions, investments outlined here will generate savings for public service organisations, paying back their cost over a number of years. Fully estimating these savings is outside the scope of this report but should be evaluated more by the government and public service employers. By way of example:

- Energy-saving measures funded by London's ReFit programme had an average payback period of 7 years [58]
- In our estimate, replacing remaining older model street lamps with LED lamps has a payback period of 9 years
- Minimising grey-fleet usage by offering car pools, lease cars, or salary sacrifice zero-emissions cars, would immediately generate savings for employers in nearly every sector
- Adopting circular procurement models and procuring remanufactured or refurbished equipment or furniture could immediately generate savings in every sector

8 Job creation through climate action in public services

Using the costings estimated for this report alongside Input-Output based multipliers, we estimate that the measures described in this report would create over 240,000 jobs, on average, over a fifteen-year programme.

Of these, buildings improvements (i.e. retrofitting public buildings, offices, and social housing, and installing heat networks where appropriate) can create 180,000.

77,000 jobs would be created through retrofitting social homes and 75,000 jobs would be created through retrofitting education sector buildings (schools, universities, colleges and Early Years education settings).

Note that this calculation assumes that the measures are implemented evenly over the next fifteen years (to 2035). In reality, a number of the measures ought to be front-loaded and so would support more jobs, but for a shorter period of time.

Box 5: Net Zero, AI, digitalisation and Just Transition

Digitalisation plays a huge role in decarbonising the economy in general and in public services in particular. The pandemic has accelerated the digitalisation of public services even further. Naomi Klein has termed this development the 'Screen New Deal'.[59]

AI advocates for the digitalisation of public services, highlight their time saving aspects, reduction in administrative costs and as a tool to meet net zero through for example teleworking or chatbot service delivery.[60]

Not only have a lot of local government services been increasingly shifted online (e-governance is the key word here) but we see an increase in e-health or e-medicine, digital patient management, e-schooling etcetera. Remote learning and e-health means that doctors, nurses, teachers and administrative staff save carbon emission in commuting, service users do not attend GPS and A&E in person.

58 https:www.c40.orgcase_studiesre-fit-programme-cuts-carbon-emissions-from-london-s-public-buildings

59 https://www.theguardian.com/news/2020/may/13/naomi-klein-how-big-tech-plans-to-profit-from-coronavirus-pandemic

60 https://www.mckinsey.com/industries/public-and-social-sector/our-insights/digital-public-services-how-to-achieve-fast-transformation-at-scale

While the digitalization of public services might be beneficial to the transition to net zero it has a significant impact on workers and service users. Digitalisation of public services has a huge impact on working conditions in public services and can lead to job cuts. Research from Public Services International suggests that the introduction of digital technologies and automation is usually motivated by the wish to increase productivity and work intensity as well as cutting jobs.[61]

It is therefore necessary that public services workers and their trade unions are consulted over the introduction of digital technology and AI and that the regulatory framework for the digitalisation of public services are established through social dialogue in all key public services as part of the Just Transition in Public Services.

Digitalization also impacts on the quality of public sector services. A large proportion of the UK's society still has no access to the internet and/or lacks the skills to communicate online.[62] Hence, a significant proportion of society is lacking access to public services if they are delivered digitally.

UNISON encourages all public service authorities and service delivery employers to sign up to the TUCs Dignity at work the AI revolution manifesto[63]

Table 2. Job creation estimates

Projects	Jobs created, average over 15 years
Buildings	200,907
Retrofit public buildings and offices	75,403
Retrofit homes	114,776
Retrofit investment properties	1,784
Heat networks	8,945
Electricity Generation	15,176
Install rooftop solar panels (where appropriate)	7,918
Additional renewable energy generation	7,258
Transport	33,511
Fully electric fleet renewal (where appropriate)	-
Onstreet electic vehicle chargers	14,244
Install electric vehicle chargers for fleet & commuters	1,626
Install EV chargers for visitor parking	446
Offer electric bikes to staff	33
Improve pedestrian & cycling infrastructure	16,311
Replacing street lighting with LEDs	851
Waste	9,184
Increasing compost capacity	11
Landfill management up to 2035	2,352
Wastewater treatment decarbonisation	6,637
Deposit Return Scheme – set up costs	165
Provide public tool libraries – set up costs	18
Land use	2,484
Switching county farms to organic	45
Land restoration projects	2,439
Total	261,261

While this calculation was made using input-output multipliers published by government, the extent of actual job creation effects will vary depending on the way retrofit measures are implemented: for example, whether strong Social Value procurement frameworks and other policies to encourage local supply chains are used. The report addendum (upcoming in 2022) will explore job creation opportunities and the policies needed further.

61 https://pop-umbrella.s3.amazonaws.com/uploads/4fbc6dfa-0406-4050-b7eb-96033ab593ff_2019%20-%20EN%20Digit%20main%20report%20with%20foreword.pdf

62 Exploring the UK's digital divide - Office for National Statistics (ons.gov.uk)

63 https://www.tuc.org.uk/research-analysis/reports/dignity-work-and-ai-revolution

Climate action measures and costs by sector (to 2035)

9 Health

The NHS is responsible for around 4% of the UK's carbon emissions. And it also is the largest employer in Britain. [64]

In October 2020, the NHS England and NHS Improvement (NHSE&I) Board approved a new strategy to tackle climate change, becoming the world's first national health service to agree net zero commitments.

NHS England has set the following overall targets:
- For the emissions we control directly (the NHS Carbon Footprint), we will reach net zero by 2040, with an ambition to reach an 80% reduction by 2028 to 2032;
- For the emissions we can influence (our NHS Carbon Footprint Plus), we will reach net zero by 2045, with an ambition to reach an 80% reduction by 2036 to 2039.[65]

NHS Trusts and ICSs have developed or are in the process of developing plans to reduce carbon emissions within their locality, with all Trusts and ICS asked to complete three year plans[66] by January and March 2022, respectively[67]:

Regional and ICS carbon footprints
Every Trust and ICS will be expected to have a board-approved Green Plan (a local net zero strategy) by January and March 2022 respectively. To support the production of these plans, Regional and ICS-level carbon footprints have been developed

Incremental reduction of carbon footprints in supply chains and procurement of goods and services:
- Suppliers will be able to self-certify their low carbon achievements against an NHS sustainable supplier framework in 2022;
- From April 2022, all NHS tenders will adopt the Government's Social Value Model, a minimum of 10% scoring criteria assessing how suppliers will contribute to the NHS' net zero targets and social value in contract delivery. Implementation guidance for Trusts and ICSs will be provided by the end of 2021;
- By 2023, the NHS will adopt the Government's Taking Account of Carbon Reduction Plans, requiring all suppliers with contracts for goods, services, and/or works with an anticipated contract value above £5 million per annum, to publish a carbon reduction plan for their direct emissions;
- From April 2024, the NHS will expand this requirement for all contracts, irrespective of value;
- From April 2027, all suppliers with contracts for goods, services, and/or works for any value, will be expected to publish a carbon reduction plan that takes into account the suppliers' direct and indirect emissions;
- By the end of the decade, suppliers will only be able to qualify for NHS contracts if they can demonstrate their progress through published progress reports and continued carbon emissions reporting through the supplier framework

In addition Green NHS/ICS plans should include:

- **Workforce and system leadership:** engaging and developing your workforce and system partners in defining and delivering carbon reduction initiatives and broader sustainability goals

- **Sustainable models of care:** Embedding net zero principles across all clinical services considering carbon reduction opportunities in the way care is delivered, which may include the provision of care closer to home

- **Digital transformation:** Alignments between the digital transformation agenda and a net zero NHS are made clear: existing digital technology and systems to streamline service delivery and supporting functions while improving the associated use of resources and reducing carbon emissions must be made. For example expanding the use of telemedicine to deliver some care remotely and using digital systems to reduce the use of paper records, printing and postage

- **Travel and transport:** reducing the carbon emissions arising from the travel and transport associated within each organisation. By:
  - increasing levels of active travel and public transport
  - investing in ultra-low emission and zero-emission vehicles for owned and leased fleets
  - maximising efficiencies in the transport of goods and services commissioned by the organisation, such as patient transport, courier services and deliveries

64 https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2020/10/delivering-a-net-zero-national-health-service.pdf

65 https://www.england.nhs.uk/greenernhs/a-net-zero-nhs/

66 https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2021/06/B0507-how-to-produce-a-green-plan-three-year-strategy-towards-net-zero-june-2021.pdf

67 file:///C:/Users/allis/Downloads/item4-delivering-net-zero-nhs-updated%20(1).pdf

- **Estates and facilities:** reducing the carbon emissions arising from the organisation's buildings and infrastructure, including:
  - improving energy efficiency and reducing energy usage
  - decarbonising heating and hot water systems
  - waste reduction and the circular economy
  - building design and refurbishments

- **Medicines:** reducing the carbon emissions related to the organisation's prescribing and use of medicines and medical products. This could include medicines optimisation and reducing waste; responsible capture or disposal of waste medicines and considering lower carbon alternative medicines.

- **Supply chain and procurement:** The NHS supply chain accounts for approximately 62% of total carbon emissions and is a clear priority area for focus in every Green Plan. This chapter should consider how NHS organisations may use their individual or collective purchasing power and decisions to reduce carbon embedded in their supply chains.

- **Food and nutrition:** This chapter should consider ways to reduce the carbon emissions from the food made, processed or served within the organisation.

- **Adaptation:** This section should summarise your organisation's plans to mitigate the risks or effects of climate change and severe weather conditions on its business and functions.

Progress on these targets among NHS Trusts is patchy.

According to a series of Freedom of Information Requests to 140 NHS trusts, it was revealed that half of the NHS trusts are not on track to reach their targets. More than half (53%) of the Trusts that responded said they are currently behind on decarbonisation in line with these targets. In comparison, 38% said they are on track, 5% said they are ahead of schedule and 4% could not answer the question.[68]

This delay is not surprising due to the pandemic which has impacted on the health service the most. The green plans correctly address the greatest challenges for decarbonising in the NHS which lie in its supply chain, pharmaceuticals and medical devices, buildings, energy and travel.

Medicines account for 25% of total NHS emissions, with inhalers and anaesthetic gases alone responsible for 5% of the NHS Carbon Footprint Plus. For example the supply of Metered Dose Inhalers (MDIs) for people with asthma contributes 3.5% of the NHS's carbon footprint. These devices can be replaced for a lower-carbon option, but this carries additional costs as below.

During the pandemic increases in carbon emissions were most directly seen with the expanded use of Personal Protective Equipment (PPE) and Heating, Ventilation, Air Conditioning (HVAC) systems to protect patients and staff and the national roll-out of the NHS COVID-19 Vaccination Programme. This has highlighted the need to now move away from single-use PPE, starting with reusable gowns. Similarly, over a 100 NHS Trusts and primary care settings are now using reusable respirators and masks. The long-term ambition is to move to reusable PPE products, produced domestically, and disposed of sustainably.[69]

Some NHS net zero targets are also to be delivered alongside a range of actions from national Government, for example the decarbonisation of the National Grid. This has hampered progress on reducing electricity emissions as the governments national grid measure have been slower than anticipated.

A big challenge to health decarbonation is funding. The Greener NHS national programme has received some funding and capacity required to begin implementing the net zero strategy in early 2021 but it simply is not enough. Recent examples of additional funding made available to NHS trusts include the £50 million NHS Energy Efficiency Fund for LED lighting, and £260 million awarded to the NHS from the government's public sector decarbonisation scheme as described above.

In NHS England Green Plan guidance it states, 'Delivering a net zero National Health Service makes clear that many of the interventions described are either cost-neutral or can provide an immediate cost benefit'. It then states that 'A further set of initiatives may require initial capital investment, followed by efficiency savings over the long run.' For e.g. investments in LED lighting, systems to manage and reduce energy consumption, and the electrification of transport fleets as costs fall.

To meet the ambitious net zero targets our calculations show that the government must provide an additional £10 billion capital investment into the NHS as a minimum to secure a pathway to meet its targets.

68 Half of NHS Trusts off-track on climate targets, new data reveals (edie.net)

69 file:///C:/Users/allis/Downloads/item4-delivering-net-zero-nhs-updated%20(1).pdf

Table 3. Climate action measures for health, with costs

	Estimated cost to 2035, £	Explanation
One-off capital expenditure		
Buildings		
Retrofit public buildings and offices	8,089,010,615	
Electricity Generation		
Install rooftop solar panels (where appropriate)	2,316,794,776	As per NHS England Net Zero plan
Transport		
Fully electric fleet renewal (where appropriate)	67,155,745	Every new fleet vehicle commissioned from 2022 is electric – extra procurement cost
Install electric vehicle chargers for fleet and commuters	112,075,715	EV chargers for the NHS fleet and staff who commute
Install EV chargers for visitor parking	343,877,429	10% of NHS visitor parking spaces have chargers installed, including 2% rapid chargers
Offer electric bikes to staff	17,464,800	Offer staff grants to purchase electric bikes for commuting
Waste		
Land use		
TOTAL capital investment	10,946,379,079	
Regular expenditure – annual		
Addressing F gas emissions	31,909,091	Replacing asthma support devices: using DPI instead of MDI and increasing recycling rate of used devices
TOTAL annual operational expenditure	31,909,091	

Table 4. Climate action measures for non-residential care sector, with costs

	Estimated cost to 2035, £	Explanation
One-off capital expenditure		
Buildings		
Retrofit public buildings and offices	122,800,725	Energy efficiency retrofits at all community care organisation offices
Electricity Generation		
Install rooftop solar panels (where appropriate)	39,568,138	
Transport		
Install electric vehicle chargers for fleet and commuters	4,429,761	Electric vehicle chargers for fleets and staff who commute
Offer electric bikes to staff	5,712,000	Offer staff grants to purchase electric bikes for commuting
Waste		
Land use		
TOTAL capital investment	172,510,625	
Regular expenditure – annual		
Expanding electric car fleets	534,411,064	
TOTAL annual operational expenditure	534,411,064	

10 Domiciliary care

Domiciliary care provision is currently delivered, in its majority, by small private sector companies, and there are no sector-wide commitments or targets on decarbonisation. However Local Authorities fund 70% of domiciliary care provision in England, and more in Wales, Scotland, and Northern Ireland. As with residential and nursing care, decarbonisation costs – if not supported by the state – would likely raise bills for Local Authorities, and care providers (mostly small businesses) would struggle to front costs. Therefore we suggest there is a role for government to support decarbonisation measures by private sector care providers.

The unique, and poorly recorded, emissions challenge to the non-residential care sector is the use of petrol or diesel cars at work. Overwhelmingly, care workers are required to use their own cars and many are not reimbursed with 'grey fleet' mileage in the same way that workers in other sectors are. As shown below, expanding the offer of lease cars to care workers, with car pools for some locations where this is appropriate, is estimated to require an annual expenditure of just over £0.54 billion for the sector, of which we suggest £0.37 billion should be supported by government.

11 Residential care

The residential care sector is majority privatised, with 84% of residential care home beds run by private providers. However, more than half care home residents have their care paid for by local authorities.

Unlike ICS and NHS Trusts Green Plans are not currently required for non-NHS organisations delivering health or social care.[70]

Table 4 presents our estimates for costs to 2035 of decarbonisation measures for the residential and nursing care sector. If private care providers were left to deliver decarbonisation measures by themselves, this may well bring up the price paid for care by local authorities: we therefore suggest that if care services continue to be delivered by private sector providers, the government should offer financing for e.g. loans for decarbonisation measures to avoid passing on the costs to Local Authorities.

The total capital investment required is £2.2 billion, out of which we estimate that government may need to support £1.5 billion.

70 https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2021/06/B0507-how-to-produce-a-green-plan-three-year-strategy-towards-net-zero-june-2021.pdf

Table 5. Climate action measures for residential care, with costs

	Estimated cost to 2035, £	Explanation
One-off capital expenditure		
Buildings		
Retrofit public buildings and offices	**1,525,688,212**	
Electricity Generation		
Install rooftop solar panels (where appropriate)	**479,608,209**	
Transport		
Fully electric fleet renewal (where appropriate)	**84,616,650**	**Every new fleet vehicle commissioned from 2022 is electric – extra procurement cost**
Install electric vehicle chargers for fleet & commuters	**125,987,700**	**EV chargers for care homes fleets and staff who commute**
Offer electric bikes to staff	**5,712,000**	**Offer staff grants to purchase electric bikes for commuting**
Waste		
Land use		
TOTAL capital investment	**2,221,612,771**	

12 Local authorities

Depending on the region, local authorities are directly responsible for between 2- 5% of their local area's emissions. Beyond their direct emissions, local authorities' powers in relation to housing, planning, transport, waste and other issues are key to delivering the transition.[71]

As such, local authorities have a direct impact on the government's commitment to achieve 'net zero' greenhouse gas emissions by 2050. Central government has the power to direct local authorities to act on its priorities through statutory requirements and/or it can incentivise local authorities to act voluntarily on its net zero targets. [72]

However, the National Audit Office has called out that there are "serious weaknesses in central government's approach to working with local authorities on decarbonisation, stemming from a lack of clarity over local authorities' overall roles, piecemeal funding, and diffuse accountabilities."

In total there are 22 different grant schemes for net zero activities that local authorities could apply for in 2020-2 and around 45 different policy areas across five government departments (the Department for Business, Energy & Industrial Strategy; The Ministry of Housing, Communities & Local Government; The Department for Environment, Food & Rural Affairs; The Department for Transport; HM Treasury) that impact on local action on climate change.

The NAO concludes that the lack of clarity and coordination from the central government 'hampers local authorities' ability to plan effectively for the long-term, build skills and capacity, and prioritise effort.'[73]

So far, the UK government has not established a strategic coordinated approach to advise local authorities on how to achieve their national net zero targets. So it is up to each local authority how to initiate their climate work, using often piecemeal limited government schemes and funding.

According to the NAO 91% of local authorities have adopted at least one net-zero commitment and more than a third (38%) of single and upper tier authorities have declared to decarbonise their local area by or before 2030.

The range and scope of local authority targets varies (see Figure 1 from 2020). [74]

As there is little consistency in how local authorities' report on their net zero achievements it is also difficult to evaluate the overall net-zero achievements of local authorities.[75]

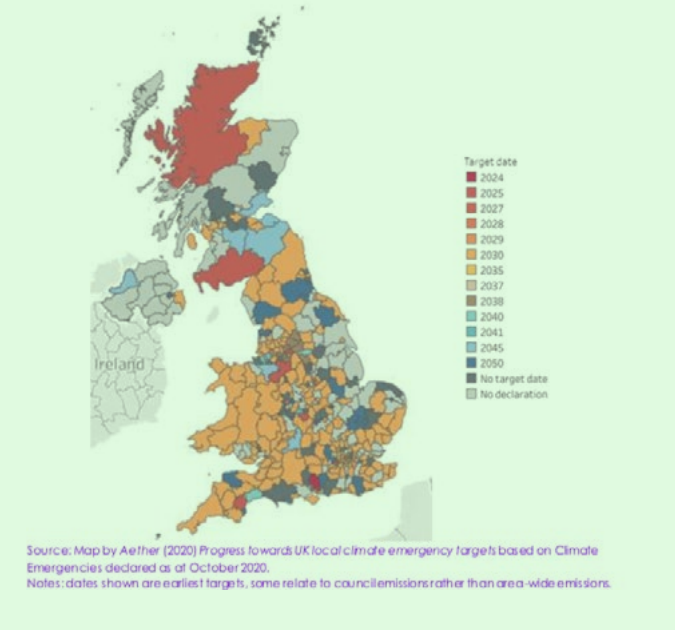


Figure 1: Local Authorities climate emergency declarations

To achieve their targets local authorities need sufficient funding. However, local authorities were confronted with substantial budget cuts in recent years and the lack of finances has been exacerbated by the Covid-19 pandemic.

UNISON has developed a database based on Freedom of Information requests that visualised the funding shortfall of local authorities.[76] The research shows that in December 2020, top-tier councils predicted funding gaps totalling over £1bn by spring 2021.

Additionally, district and borough councils faced a collective deficit of £179m by Spring 2021.[77] The budget shortfalls jeopardize the climate targets of local authorities. Budget shortages leave local authorities with the false choice between delivering essential services and meeting their climate targets. Indeed to meet Net Zero local authorities need more funding not more austerity.

The NAO estimates that the various and fragmented 20+ grant schemes provided to local authorities add up to £1.2 billion in 2020-21.[78] This is far from sufficient.

Our analysis shows that out of the public service sectors

71 https://www.theccc.org.uk/publication/local-authorities-and-the-sixth-carbon-budget/
72 https://www.nao.org.uk/wp-content/uploads/2021/07/Local-government-and-net-zero-in-England.pdf
73 https://www.nao.org.uk/wp-content/uploads/2021/07/Local-government-and-net-zero-in-England.pdf
74 https://www.theccc.org.uk/publication/local-authorities-and-the-sixth-carbon-budget/
75 https://www.nao.org.uk/wp-content/uploads/2021/07/Local-government-and-net-zero-in-England.pdf
76 https://councilcuts.unison.org.uk/data-visualisation/p/1
77 https://www.unison.org.uk/news/article/2021/04/unison-research-reveals-scale-of-council-deficits/
78 https://www.nao.org.uk/wp-content/uploads/2021/07/Local-government-and-net-zero-in-England.pdf

examined, local government required both the largest up-front investment (£68 billion) and additional operational budget (£0.5billion a year), because of their responsibility for building retrofits, pedestrian and cycling infrastructure, and the need for enhanced waste collection and processing services.

Table 6. Climate action measures for local government, with costs

	Estimated cost to 2035, £	Explanation
One-off capital expenditure		
Buildings		
Retrofit public buildings and offices	2,535,550,679	Energy efficiency retrofits to all council offices and public buildings
Retrofit homes	13,891,421,700	Retrofit all council housing to at least EPC level B
Retrofit investment properties	864,000,000	Energy efficiency retrofits to all council investment properties, up to 4% of property value
Heat networks	15,750,000,000	Meeting the CCC's recommendations on heat network deployment
Electricity Generation		
Install rooftop solar panels (where appropriate)	797,063,850	
Additional renewable energy generation	9,202,936,150	
Transport		
Fully electric fleet renewal (where appropriate)	168,362,883	Every new fleet vehicle commissioned from 2022 is electric – extra procurement cost.
Onstreet electic vehicle chargers	11,733,333,333	Install 50% of on-street chargers necessary across the UK
Install electric vehicle chargers for fleet & commuters	215,625,000	Electric vehicle chargers for fleets and staff who commute
Offer electric bikes to staff	10,105,883	Offer staff grants to purchase electric bikes for commuting
Improve pedestrian & cycling infrastructure	7,900,000,000	Equivalent to 50% of local authorities implementing a pedestrianisation & cycling improvements scheme on the scale of London's Mini Holland schemes.
Replacing street lighting with LEDs	832,000,000	Ensure that all street lighting is energy efficient (replace older lamps with LEDs)
Waste		
Increasing compost capacity	4,500,000	Expand composting facilities and supply forced aeration technology wherever possible
Landfill management up to 2035	1,244,000,000	Manage landfill to minimise emissions
Deposit Return Scheme – set up costs	1,265,871,742	Set up scheme to collect used containers (bottles, tins, jars) for reuse or recycling
Provide public tool libraries – set up costs	27,502,500	A tool library in every library to reduce the need for people to buy infrequently used household tools
Land use		
Switching county farms to organic	52,542,000	Offer grants and support to County Farms to convert to sustainable farming methods
Land restoration projects	1,990,000,000	On average one land restoration project per local authority
TOTAL capital investment	68,484,815,721	
Regular expenditure – annual		
Increase composting capability	714,286	More waste goes to compost
Collect household food waste and recycling weekly, annual cost	373,000,000	Weekly food waste and recycling collections for all households in the UK who do not get them yet
Provide public tool libraries, annual cost	110,010,000	A tool library in every library to reduce the need for people to buy infrequently used household tools
TOTAL annual operational expenditure	483,724,286	

Box 6: Energy from Waste (EfW) – rethinking recycling and waste prevention

While EfW is often promoted as an environmentally friendly alternative to landfilling, it often ends up discouraging waste prevention as well as recycling. Incinerators are expensive to build and to maintain. Due to the high investment costs, municipalities usually sign long- term contracts with private incinerator providers. For companies to recover the investment and to make a profit they need a guaranteed stream of waste. Large-scale incinerators demand about 100,000 tonnes of municipal solid waste a year. As such contracts with private providers often bind municipalities to deliver a minimum quantity of waste or to pay compensation fees in case this does not happen.[79]

The United Nations Environmental Programme (UNEP) warns that EfW therefore creates a "lock-in effect" as the requirement for a certain amount of waste discourages recycling and waste prevention.[80] Countries can therefore become dependent on waste. This happened, for example, in Sweden: due successful waste reduction efforts Sweden became dependent on waste imports in order to run its EfW incinerators. [81]

Burning waste with incinerators to generate energy is a profitable business opportunity. According to the UNEP the worldwide EfW market had a value of $9.1 billion in 2016 and is expected to increase to over $25 billion by 2025. Conservatively estimated, the EfW market is growing by 5.5 per cent annually.[82]

13 Education

In our analysis, buildings energy efficiency is by far the biggest challenge for decarbonising education settings. The gross internal floor area of education institutions is larger than any other sector examined in our analysis. According to Schools Week, currently schools contribute to 25% of carbon emissions from the public sector.[83]

The UK has 32,000 schools which not only create significant emissions but are also influencing future generations in their views on climate change. 649 schools have voluntarily committed to become net zero by 2030 by signing up to the 'lets go zero' campaign supported by NGOs and trade unions like UNISON.

At least sixteen UK universities[84] and a number of schools have made climate emergency declarations, with many others taking steps such as upping the numbers of electric vehicles in their fleets.[85]

There is, however, no national regulation that requires schools to go net-zero. The responsibility for the condition of school buildings lies with the individual schools, multi-academy trusts and local authorities.[86] Most school buildings are old (most of them were built before 1976) and energy-intensive.

According to the Department for Education repairing or replacing all defects in all schools in England alone would cost another £11.4 billion.[87] While schools can access funding from the £1 billion public sector decarbonisation scheme the government's funding is far too low to enable the UK's schools to become net zero.

The government's School Rebuilding Programme committed to 500 rebuilding projects over the next decade.[88] These schools are supposed to be energy efficient. In February 2021 50 schools were identified that shared £1 billion in capital funding and in July 2021 another 50 schools were selected for rebuilding but it is not yet known how much funding has been allocated for it.

79 https://gala.gre.ac.uk/id/eprint/29669/7/29669%20WEGHMANN_Safe_Jobs_in_the_Circular_Economy_2020.pdf
80 UNEP (2019) Waste to Energy. Considerations for informed decision making. United Nations Environment Programme
81 UNEP (2019) Waste to Energy. Considerations for informed decision making. United Nations Environment Programme
82 UNEP (2019) Waste to Energy. Considerations for informed decision making. United Nations Environment Programme
83 https://schoolsweek.co.uk/long-read-how-schools-will-join-the-green-revolution/
84 https://www.climateemergency.uk/universities/
85 https://fleetservicessummit.co.uk/briefing/uk-university-fleets-leading-the-way-for-ev-uptake/
86 https://www.nao.org.uk/report/capital-funding-for-schools/
87 https://schoolsweek.co.uk/long-read-how-schools-will-join-the-green-revolution/
88 https://www.gov.uk/government/news/second-round-of-prime-ministers-school-rebuilding-programme-launched

Box 7: Lets go Zero demands for Net Zero Schools [89]

1. In the run-up to, or at COP26, the government commits to all UK schools being net zero carbon by 2030 and announces long term and consistent policies and funding to enable this.

2.Government ensures there is investment in training teachers in education for sustainable development across the curriculum, and in equipping colleges and schools to give all learners a connection to nature.

3. The government commits to investing in adapting and retrofitting the school estate.

4. The Department for Education commits to improving their building specifications, so that all new school buildings from 2022 onwards will be net zero carbon.

5. By 2025, every school is mandated to have a funded Climate Action Plan that provides step by step guidance cutting through the current complicated procedures that will result in zero carbon status.

6. Every school should have a trained staff member who acts as a Sustainability Lead

7. Sustainability to be embedded as a statutory feature of careers guidance in UK schools by 2025

UNISON along with key Education unions in Autumn 2021 have also joined up to campaign that the Secretary of State for Education takes urgent action to ensure that climate change in education becomes fully embedded in our system.

As unions representing those who work in education, concerns ae being raised that the Government has yet to grasp the gravity of the situation. Education trade unions have called for:

- A comprehensive review of the entire curriculum, so that it is preparing and mobilising our whole society for a sustainable future
- As an interim measure, the government should support Jim Knight's Private Members Bill, restoring sustainability as a pillar of the curriculum
- A comprehensive plan to decarbonise the entire school estate by 2030, as part of an overdue refurbishment and repair programme
- A detailed policy on green travel for students, staff, and parents should be developed

89 https://letsgozero.org/policy-for-zero-carbon-schools/

The DfE has recently established a Sustainability and Climate Change Unit to co-ordinate and drive activity across the Department and Education sectors and is currently a Sustainability and Climate Change Strategy.

The DfE sustainability strategy[90] is likely to centre on four strategic aims, with education as a thread through all:
1) Net Zero by 2050
2) Resilient to Climate Change,
3) A better environment for future generations
4) Citizens connected to nature

Each outcome will cover each of our sectors (Early Years, Schools, Further Education, Higher Education, Children Social Care) as well as the organisation itself and its ALBs

Analysis published by Teach the Future values the cost of Net Zero aligned retrofits in all schools in the UK at £13 billion.[91] Our estimate for the cost of retrofits to all education settings including universities, Early Years settings, and Further Education colleges is £23 billion – see Table 7.

90 https://committees.parliament.uk/writtenevidence/37859/pdf/

91 https://uploads-ssl.webflow.com/5f8805cef8a604de754618bb/5fa3e64a154cd64f971e37db_Net-Zero%20Costings.pdf

14 Police and Justice

Policing is a devolved matter. Most police powers and functions in Scotland are set by the Scottish Parliament. In Scotland the police committed to reducing CO2 emissions by 35% between 2021-2026 and work in line with the Scottish 2045 Net Zero target.

To do so, it sets out to deliver a ULEV fleet by 2030, and is working on modern, energy efficient estate management.[92]

There are 43 geographic police forces in England and Wales (plus the British Transport Police, Civil Nuclear Police and the Ministry of Defence Police). There is no coordinated net-zero target in the police in England and Wales.

Each region is responsible for setting their own target. While some regions, such as Surrey police have made their own commitment to be net zero by 2030 a coordinated strategy in England and Wales is lacking.[93] The example of Surrey's police demonstrates that the transport takes up the majority of emissions for the police (see Figure 1). Hence, the electrification of the police fleet needs to be a priority to decarbonise the police.

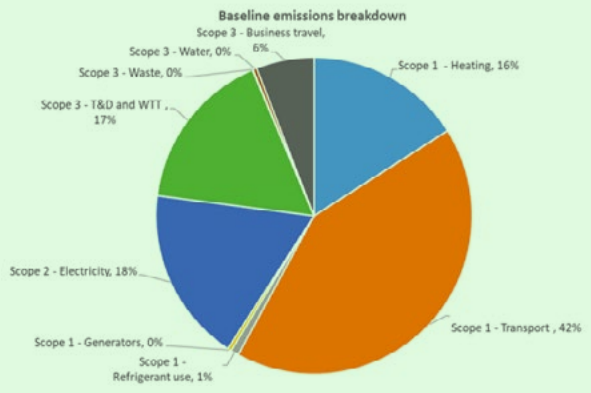


Figure 1: Surrey Police baseline emissions
Source: Surrey Police Carbon Management Plan[94]

Table 8 presents our estimates for costs of approximately £900 million of capital investment to 2035 of decarbonisation measures for police and probation service organisations.

92 https://www.spa.police.uk/spa-media/k40frogo/rep-b-20210319-item-7-appendix-a-environmental-strategy.pdf

93 https://www.surrey-pcc.gov.uk/wp-content/uploads/2021/03/05b-Surrey-Police-Carbon-management-plan-Final.pdf

94 https://www.surrey-pcc.gov.uk/wp-content/uploads/2021/03/05b-Surrey-Police-Carbon-management-plan-Final.pdf

15 Housing associations

Currently, 2.7 million homes in England are owned by housing associations. The sector aims to invest £70bn by 2050 mainly in the fabric, heating systems and components of existing homes. However, Savills estimate that at least an additional £36bn would be required to reach net zero by 2050.[95]

Funding committed by the government to decarbonising social homes so far amounts to approximately £2 billion through the Local Authority Delivery scheme and the Social Housing Decarbonisation Fund.

Table 9 presents our estimates for costs of approximately £33 billion of capital investment to 2035 of decarbonisation measures for housing associations. For obvious reasons, the largest cost is that of retrofitting the housing stock they manage.

16 Water

Water utilities published a joint industry plan to get to Net Zero emissions by 2030. The main measures under the plan include a 60% reduction in process emissions, a fully electric car and van fleet, 3 GW new renewable energy capacity on own land, and efficiency improvements to reduce water consumption.[96] The water industry estimates that this plan would cost between £2-4 billion to reach net zero in the UK's water sector by 2030.

Money which could easily be raised if not huge sums would be paid out to shareholders every year. In England the water services are privatised. Every year between 2010 to 2021 the water and sewerage companies have paid shareholders an average of £1.4billion (See Figure 1). This totals £16.9 billion for the period between 2010 to 2021.[97] In fact, in England finances for investments have been lacking. Investments have been paid for by service users and not involved any finance from shareholders. The companies still borrow large amounts of money every year to pay out dividends to shareholders, accumulating a large pile of debt and an annual bill for expensive interest rates. [98]

95 National Housing Federation - Decarbonisation of housing association homes – a briefing for external stakeholders

96 https://www.water.org.uk/routemap2030/wp-content/uploads/2021/03/Water-UK-Net-Zero-2030-Routemap-Summary-updated.pdf

97 https://gala.gre.ac.uk/id/eprint/34274/

98 https://gala.gre.ac.uk/id/eprint/34274/

Table 7. Climate action measures for education, with costs

	Estimated cost to 2035, £	Explanation
One-off capital expenditure		
Buildings		
Retrofit public buildings and offices	23,785,747,207	Energy efficiency retrofits to all schools, Early Years settings, FE colleges and university buildings
Electricity Generation		
Install rooftop solar panels (where appropriate)	6,812,538,331	
Transport		
Fully electric fleet renewal (where appropriate)	5,967,589	Every new fleet vehicle commissioned from 2022 is electric – extra procurement cost
Install electric vehicle chargers for fleet & commuters	71,108,655	Electric vehicle chargers for fleets and staff who commute
Offer electric bikes to staff	18,720,000	Offer staff grants to purchase electric bikes for commuting
Waste		
Land use		
TOTAL capital investment	30,694,081,783	

Table 8. Climate action measures for police and probation, with costs

	Estimated cost to 2035, £	Explanation
One-off capital expenditure		
Buildings		
Retrofit public buildings and offices	374,563,948	Energy efficiency retrofits at all probation service offices and police stations
Electricity Generation		
Install rooftop solar panels (where appropriate)	98,119,049	
Transport		
Fully electric fleet renewal (where appropriate)	131,837,515	Every new fleet vehicle commissioned from 2022 is electric – extra procurement cost
Install electric vehicle chargers for fleet & commuters	168,846,385	Electric vehicle chargers for fleets and staff who commute
Offer electric bikes to staff	2,224,871	Offer staff grants to purchase electric bikes for commuting
Waste		
Land use		
TOTAL capital investment	775,591,767	

Table 9. Climate action measures for non-residential housing associations, with costs

	Estimated cost to 2035, £	Explanation
One-off capital expenditure		
Buildings		
Retrofit homes	33,581,704,000	Retrofit all housing association homes to at least EPC level B.
Electricity Generation		
Transport		
Fully electric fleet renewal (where appropriate)	33,146,800	Every new fleet vehicle commissioned from 2022 is electric – extra procurement cost.
Install electric vehicle chargers for fleet & commuters	77,496,240	Electric vehicle chargers for fleets and staff who commute
Offer electric bikes to staff	1,106,120	Offer staff grants to purchase electric bikes for commuting.
Waste		
Land use		
TOTAL capital investment	33,693,453,160	

Figure1: Dividends paid by water and sewerage companies 2010-2021

A study from 2018 has shown that in Scotland, where the water sector is in public ownership, more money has been invested to a lower cost for service users. Scottish water invested 35% more per household since 2002. If the ten English water companies would have done the same £28bn more could have been invested in infrastructure. [99]

By taking England's water companies back into public ownership not only billions of pounds that are dished out to shareholders could be saved. It would also be much cheaper for the public sector to borrow money.

PSIRU research has shown that it costs £2.1 billion per year more in England for private dividends and interest than if the companies were in the public sector. [100]

Decarbonising waste water treatment is the hardest emissions challenge and one that is likely to be only fully addressed after 2030. Emissions arising from sewage treatment currently accounts for two thirds of the total greenhouse gases output by water and sewerage companies.[101] The Committee on Climate Change's Balanced pathway assumes that wastewater treatment emissions only improve by 21%. However, in the Widespread Engagement scenario, the CCC proposes that £12.2 billion of capital investment from 2035 to 2050 would result in a 50% emissions cut.[102]

Any progress in decarbonising waste water treatment is undermined by water companies illegally discharging sewage into rivers and the sea. Research has shown that England's water companies illegally discharged untreated sewage on a regular basis, most of it goes unrecorded and companies have manipulated their data.[103] Thames Water, the UK's biggest water company, has tipped untreated sewage into rivers on 735 days (an equivalent to two years) according to a detailed analysis of the company's spill data over the past three years.[104]

Currently water utilities in England and Wales are corporations in the private sector and predominantly could - and should - access investment through private finance.

However, where major challenges in decarbonising wastewater treatment are concerned, some limited public investment is likely to be necessary. Accordingly, in our analysis, approximately £2.1 billion of £7.4 billion required to decarbonise the water utilities sector should be financed by central government.

99 https://gala.gre.ac.uk/id/eprint/21097/20/21097%20YEARWOOD_The_Privatised_Water_Industry_in_the_UK_2018.pdf

100 https://gala.gre.ac.uk/id/eprint/21097/20/21097%20YEARWOOD_The_Privatised_Water_Industry_in_the_UK_2018.pdf

101 Wastewater treatment: Reducing emissions while adding value - Utility Week

102 https://www.theccc.org.uk/wp-content/uploads/2021/02/The-Sixth-Carbon-Budget-Dataset.xlsx

103 https://www.ft.com/content/e85e6682-16c6-4ad4-8072-74ba634e7780

104 https://www.ft.com/content/e85e6682-16c6-4ad4-8072-74ba634e7780

Table 10. Climate action measures for water utilities, with costs

	Estimated cost to 2035, £	Explanation
One-off capital expenditure		
Buildings		
Retrofit public buildings and offices	**40,735,589**	**Retrofit all water utility offices.**
Electricity Generation		
Install rooftop solar panels (where appropriate)	**13,125,585**	
Transport		
Fully electric fleet renewal (where appropriate)	**11,197,901**	**Every new fleet vehicle commissioned from 2022 is electric – extra procurement cost.**
Install electric vehicle chargers for fleet & commuters	**30,109,797**	**Electric vehicle chargers for fleets and staff who commute**
Offer electric bikes to staff	**504,000**	**Offer staff grants to purchase electric bikes for commuting.**
Waste		
Wastewater treatment decarbonisation	**7,328,000,000**	**Invest in transforming wastewater treatment towards zero-emissions systems, as per CCC high ambition scenario.**
Land use		
TOTAL capital investment	**7,423,672,872**	

17 Environment Agency

As a regulator, the Environment Agency has a key role to play in the UK's roadmap to net zero by 2050.

The Environment Agency has set out its own strategy and committed itself to cutting its carbon emissions by, including those of its supply chain, by 45% by 2030.[105] Around 84% of the Environment Agency's carbon footprint is stemming from its supply chain, so this is an area it needs to focus on. [106]

The Environment Agency is also aiming to become a net-zero organisation by 2030 (this excludes the supply sector). Currently the Environment Agency is producing around 273,000 tonnes of carbon annually. Most of it - around 148,000 tonnes per year – is stemming from construction. One of its decarbonisation pledges is to use low-carbon concrete when constructing flood defences and large infrastructure projects. Further actions include the move towards the use of energy-efficient pumps in flooding responses and to switch to electric vehicles by 2023, and also to reduce its number of vehicles.[107]

Table 11 presents our estimates for costs of approximately £350 million of capital investment to 2035 of decarbonisation measures for the Environment Agency.

105 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/989667/EA-net-zero-2030.pdf

106 https://www.letsrecycle.com/news/environment-agency-targets-net-zero-by-2030/

107 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/989667/EA-net-zero-2030.pdf

Table 11. Climate action measures for the Environment Agency, with costs

	Estimated cost to 2035, £	Explanation
One-off capital expenditure		
Buildings		
Retrofit public buildings and offices	**35,221,332**	**Retrofit all Environment Agency offices.**
Electricity Generation		
Install rooftop solar panels (where appropriate)	**11,348,813**	
Transport		
Fully electric fleet renewal (where appropriate)	**133,006,678**	**Every new fleet vehicle commissioned from 2022 is electric – extra procurement cost.**
Install electric vehicle chargers for fleet & commuters	**170,343,750**	**Electric vehicle chargers for fleets and staff who commute**
Offer electric bikes to staff	**84,800**	**Offer staff grants to purchase electric bikes for commuting.**
Waste		
Land use		
TOTAL capital investment	**350,005,373**	

18 The public investment gap

Public service organisations, already cash-strapped in times of austerity, should not bear the extra costs of the transition to Net Zero. The UK Government should make funds available to public service organisations to take climate action - with some exceptions where services are fully privatised (e.g. currently most water utilities), where borrowing by the implementing public authority is appropriate and straightforward guaranteed returns (e.g. co-financing district heating schemes), or where the measures relate to profit-oriented activities by public authorities (e.g. retrofitting investment properties owned by local authorities).

Based on this principle, we estimate that out of the total £144 billion required to decarbonise public services, central government should provide approximately £122 billion. By contrast, in our analysis, public investment committed to the same measures since 2020 amounts to only £8.2 billion: only 7% of what is needed.

Assuming overall funding levels are maintained in future years after the current Comprehensive Spending Review period, we can project this overall level of investment forward to 2035 - a potential government investment over 15 years of £30.7 billion into these measures.

If government delivered this future funding, there would still be a shortfall in funding to decarbonise public services of over £90 billion.

Table 12: A breakdown of the investment gap by sector and by measure

Projects	Total capital investment needed to 2035	Capital investment needed from government	Capital investment committed	% committed	Public capital investment shortfall
Buildings					
Retrofit public buildings and offices	36,509,318,307	35,978,670,963	2,885,022,500	8.02%	33,093,648,463
Retrofit homes	36,559,071,900	36,559,071,900	1,754,807,500	4.80%	34,804,264,400
Retrofit investment properties	864,000,000	0		-%	0
Heat networks	15,750,000,000	4,950,000,000	701,923,000	14.18%	4,248,077,000
Electricity Generation					
Install rooftop solar panels (where appropriate)	10,568,166,752	10,400,781,701	0	0.00%	10,400,781,701
Additional renewable energy generation	9,202,936,150	6,902,202,113	0	0.00%	6,902,202,113
Transport					
Fully electric fleet renewal (where appropriate)	608,948,930	577,813,482	0	0.00%	577,813,482
Onstreet electic vehicle chargers	11,733,333,333	11,733,333,333	572,000,000	4.88%	11,161,333,333
Install electric vehicle chargers for fleet & commuters	916,578,265	646,547,866	50,000,000	7.73%	596,547,866
Install EV chargers for visitor parking	343,877,429	257,908,072	0	0.00%	257,908,072
Offer electric bikes to staff	61,634,475	57,760,620	900,000	1.56%	56,860,620
Improve pedestrian & cycling infrastructure	7,900,000,000	7,900,000,000	2,000,000,000	25.32%	5,900,000,000
Replacing street lighting with LEDs	832,000,000	416,000,000	0	0.00%	416,000,000
Waste					
Increasing compost capacity	4,500,000	4,500,000	0	0.00%	4,500,000
Landfill management up to 2035	1,244,000,000	1,244,000,000	0	0.00%	1,244,000,000
Wastewater treatment decarbonisation	7,328,000,000	833,785,376	46,200,000	5.54%	787,585,376
Deposit Return Scheme - set up costs	1,265,871,742	1,265,871,742	27,600,000	2.18%	1,238,271,742
Provide public tool libraries - set up costs	27,502,500	27,502,500	0	0.00%	27,502,500
Land use					
Switching county farms to organic	52,542,000	52,542,000	0	0.00%	52,542,000
Land restoration projects	1,990,000,000	1,990,000,000	160,000,000	8.04%	1,830,000,000
Total	143,762,281,783	121,798,291,668	8,198,453,000	6.73%	113,599,838,668

19 Some climate measures beyond 2035

Local Government and Waste

Waste incinerators will need to be retrofitted with CCS from 2040 onwards. Capital investment is estimated at £6.6 billion between 2040-2050, and annual operational expenditure from 2040 to 2050 at £317 million.

Although landfill declines with reduced waste and increased re-use and recycling, landfill management has ongoing costs. These are estimated as £378 million in capital investment and annual expenditure of £33 million from 2035-2050.

Water Utilities

Residual decarbonisation of waste-water treatment will require £12.2 billion of capital investment from 2035 to 2050.

Water utilities will need to procure zero carbon HGVs once these are available, but these costs have not been estimated.

Local Government and Aviation

A number of local governments majority own airports, including Luton, Stansted, Manchester and East Midlands airports. The shift towards low carbon fuels (whether sustainable aviation fuels, hydrogen, or electric) will require significant investment into airport infrastructure, to provide appropriate fuel storage and re-fuelling facilities. These measures are expected from 2035 onwards but have not been costed within this analysis.

20 Conclusion

The double challenge of recovering from the Covid-19 pandemic and the climate emergency need to be taken as an opportunity to build back better and greener. Through lock down measures during the pandemic the UK achieved a record fall of 13% in emissions, mainly due to the decrease in travel by plane, ships and roads.

However, most of the emissions are picking up again as the economy opens. Structural changes are needed to keep emissions down. The government needs to seize the moment of change after the pandemic and create a new normal that is addressing the climate emergency.

The public sector, which contributes to 8% of the UK's direct greenhouse gas emissions, is an essential part of the transformation. This report provides a road map on how the government can decarbonise public services and how much it would cost.

The bulk of climate action for public services could be achieved in the next 15 years. Our calculations show that this would require a capital investment of £140 billion up to 2035, out of which at least £122 billion should be provided by central government.

The government's current funding is lacking well short of that. The current government has only committed £8 billion towards the identified public services decarbonisation measures. There is therefore a public investment gap of £113 billion between now and 2035.

The quicker the government starts to decarbonise its public services the higher the financial benefits, as decarbonisation will bring down operating costs in the long run. It is essential that decarbonisation measures are properly funded and are implemented in dialogue with the public services workforce.

Appendix: Methodology

Sectors examined

The Public Service sectors examined were set in the Terms of Reference according to UNISON's breakdown of workplace sectors[108]:

- Health care and social care: separated into Health care and Residential care
- Domiciliary care
- Local government
- Education
- Housing which includes Community and Local government
- Police and justice
- Water, environment and transport: separated into Water utilities and Environment Agency in this report. This report does not cover Transport
- Energy: Reviewing decarbonisation of the UK's energy supply is beyond the scope of this report

Identifying decarbonisation measures

This report uses the recommendations of Climate Change Committee's report Local Authorities and the Sixth Carbon Budget[109] as a starting point to identify necessary decarbonisation measures. It also used the CCC's framework of areas of action to group measures: Buildings, Transport, Waste, Electricity Generation and Land Use, with the addition of Procurement. Some additional measures for local government were identified using the Local Government Association's Councillor's workbook on Net Zero.[110]

These measures were then examined in relation to other public service sectors. Additional measures for other sectors were identified using sector-specific analysis. For example, for Health care this included identifying measures from NHS England's report on "Delivering a 'Net Zero' National Health Service".[111]

The analysis only considered measures requiring significant investment. It does not cost measures requiring minimal investment e.g. a change in planning requirements, which might only carry an administrative cost to the organisation implementing it.

This Report does not cost the necessary increase in capacity required by public service sectors to deliver decarbonisation measures. E.g. Local Authorities will require more staff to deliver the local spatial, energy and transport planning needed to coordinate decarbonisation, and the Environment Agency could play a greater role in aiding decarbonisation.

An addendum to this report with a final analysis alongside case studies to be published in Spring 2022 will include this.

Costing decarbonisation measures

Where provided by the Climate Change Committee (e.g. the additional costs of wastewater treatment and of composting services), costings from the Sixth Carbon Budget are used. These were predominantly taken from the Balanced Net Zero Pathway, but where more appropriate from the Widespread Innovation Pathway.

In all other cases, costings are calculated using official statistics (e.g. the Internal Floor Area of NHS hospitals and the number of vehicles in NHS fleets), industry data (e.g. the Internal Floor Area of Higher Education institutions; the projected comparative cost of electric and petrol vehicles), and published case study data (e.g. emissions savings achieved through Public Sector Decarbonisation Scheme grants). Government sources of statistics were favoured wherever possible.

Timelines

The UK government has set a legal target to reduce emissions by 78% by 2035. The remaining 22% are predominantly in harder to decarbonise sectors, including heavy industry and transport (eg aviation and HGVs). The emissions of public service sectors are predominantly in the initial 78%.

Costing residual emissions (eg investment costs for local authority owned airports to provide low carbon fuel, or procurement of zero emission HGVs) is more speculative, as this often relies on nascent and technologies.

Therefore, this report focuses on costing measures to be implemented prior to 2035. Cumulative investment costs are those to 2035, and annual operational expenditures are averages to 2035.

Where investment for measures beyond 2035 has been identified, these are identified in the 2035 - 2050 investment section. Examples include wastewater treatment, and reducing residual waste emissions (after waste reduction, re-use, recycling etc), by retrofitting CCS to the remaining Energy-from-Waste plants

108 https:www.unison.org.uk/at-work

109 https:www.theccc.org.ukwp-contentuploads202012Local-Authorities-and-the-Sixth-Carbon-Budget.pdf

110 https:www.local.gov.ukpublicationscouncillors-workbook-local-pathway-net-zero#3-opportunities-for-action

111 https:www.england.nhs.ukgreenernhswp-contentuploadssites51202010delivering-a-net-zero-national-health-service.pdf

Source of Investment

For the purposes of estimating government investment needed, we assume that the government should fully support costs of decarbonisation except where

a) returns are guaranteed and so borrowing by public authorities is straightforward and appropriate (e.g. heat networks) or;

b) the measure concerns for-profit activities of a public authority (e.g. local authority investment properties).

Where public services are delivered by the private sector but funded by public sector procurement (e.g. care), we suggest that government should directly support the costs of decarbonisation for those services (though loans), to avoid passing those costs directly back to the public authorities that fund those services.

Committed government investment

Estimates of government investment commitments are drawn from the Budgets and Spending Reviews 2020 and 2021.

Estimating job creation

Employment multipliers including direct and indirect (supply chain) jobs are sourced or calculated from ONS, Homes and Communities Agency, and other government sources and have then been supplemented with data from published third-party economic modelling.

For all construction-related projects we use a weighted average of a variety of estimated multipliers, prioritising government sources, recent estimates, and a close match to the project. For other projects, ONS multipliers were used.

Note that nearly every multiplier in the assessment relies on input-output modelling (top-down) methodology, which tends to slightly overstate job creation compared to empirical (bottom-up) methods. Due to the lack of exact precedent for many of the projects and due to the need to account for supply chain jobs, we consider input-output based multipliers the most appropriate methodology. In all cases, multipliers are downgraded to account for future efficiencies (i.e. we assume fewer jobs will get created per £ million investment in the future than would be the case today).

We assume that switching fleets to electric vehicles does not create any extra jobs, as any job creation would depend on procurement policy that favours domestically manufactured cars.

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